

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An apparatus for medical screening and diagnosis by dual detection of stethoscopic and Doppler signals, comprising a sound-transmitting linking conduit (3, 33) connected, at one end, to a housing (100) which at least partially forms an ear trumpet (1, 1') provided with a membrane (2), and, at the other end, to at least one earpiece (4) for listening to a stethoscopic signal coming from the ear trumpet, ~~[characterized in that]~~ wherein the housing (100) is coupled to at least one ultrasound probe (8) designed to permit convergence of reception of the ultrasonic and stethoscopic signals and connected to a transducer processing circuit (37) capable of supplying, from a Doppler signal, an audio signal, by coupling the processing circuit (37) to a loudspeaker (34) ~~in contact with the ear trumpet (1, 1')~~ for stethoscopic-type listening, ~~[[and]]~~ or a video signal or both, by coupling the processing circuit (37) to viewing means (31, 32, 39) for providing visual information.
2. (Currently Amended) The apparatus for medical screening and diagnosis as claimed in claim 1, in which means are provided for delivering (60, 6a) and forming (6b) a film of semi-solid product (61) on the skin of the patient, for achieving an intimate contact between skin and housing and for channeling ~~the propagation of the waves~~ wave propagation.
3. (Currently Amended) The apparatus for medical screening and diagnosis as claimed in claim 1, in which ~~[[a]]~~ the loudspeaker (34) ~~[[is provided which]]~~ is arranged substantially against the ear trumpet (1, 1') so that the audio signal is amplified by the ear trumpet and renders the stethoscopic sound perceptible at the earpiece (4) via the linking conduit (3, 33), in the same way as in a stethoscope.

4. (Currently Amended) The apparatus for medical screening and diagnosis as claimed in claim 1, in which a microphone (40) is provided which is coupled to the ear trumpet (1, 1') ~~so as to pick up~~ to detect the stethoscopic sound signal and transmit it, in the form of an electrical signal, to the processing circuit (37) and produce a video signal.
5. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 1, in which the viewing means are in the form of a liquid crystal screen (32) permitting graphic display of a stethoscopic and Doppler signal, or in the form of a module with light-emitting diodes (39).
6. (Currently Amended) The apparatus for medical screening and diagnosis as claimed in claim 1, which comprises a microprocessor controlled by an interpretation algorithm and coupled to the processing circuit (37) in order to permit analysis and a combination of stethoscopic ~~[[and/or]]~~ or Doppler measurements or both, delivered by the processing circuit (37) or ~~[[else picked up]]~~ detected from stethoscopic listening, and ~~to be able to supply a~~ provide stethoscopic diagnosis, Doppler diagnosis ~~[[and/or]]~~ or cross diagnosis or a combination thereof.
7. (Currently Amended) The apparatus for medical screening and diagnosis as claimed in claim 1, which comprises a display module with three light-emitting diodes (39) which is mounted on the housing (100), which ~~[[shows the]]~~ provides an interpretation and ~~[[provides]]~~ a diagnosis based on the measurement of the Doppler signal or a cross diagnosis based on the interpretation algorithm by giving preference to the Doppler diagnosis when the interpretations are divergent, each diode of the module (39) emitting in a specific color corresponding, respectively, to a positive diagnosis, a negative diagnosis, or a non-interpretable result in the case where at least the Doppler measurement is not interpretable.

8. (Previously Presented) The apparatus for medical diagnosis as claimed in claim 1, wherein, instead of displaying a non-interpretable result when at least the Doppler measurement is such, the diagnosis is in this case based on the measurement of the stethoscopic signal, each diode of the module (39) emitting in the specific color corresponding, respectively, to a positive diagnosis, a negative diagnosis, or a non-interpretable result, in the case where the stethoscopic signal is not interpretable, or of malfunction of the apparatus, the diagnosis is then based on the stethoscopic sound signal.
9. (Previously Presented) The apparatus for screening and medical screening and diagnosis as claimed in claim 1, wherein, a system of recording and viewing the Doppler or stethoscopic video signal is provided by wireless connection between the electronic processing circuit (37) and a viewing or printing module (50).
10. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 1, wherein in which peripheral outputs (101, 42) are provided in order to permit a connection to a microcomputer and optionally to an audio headset.
11. (Currently Amended) The apparatus for medical screening and diagnosis as claimed in claim 1, wherein, for [[simple]] use of the probe [[in particular]] with the aid of a finger (35), an electrical circuit (29) is provided for powering the ultrasound probe (8), controlled by an actuator (18, 28, 38) which can be mounted on the linking conduit (3, 33) or on the housing (100).
12. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 11, wherein the actuator is a multifunction switch which serves also for selective control to the means for supplying stethoscopic, Doppler or cross diagnoses (29) by the viewing means (31, 32, 39), to the means for triggering the diagnosis (30) from measurements delivered by the processing circuit (37) or picked up from listening, and to the system for recording and remote viewing (50), the multifunction being realized by

different stages identified by a decision table or a logic unit for programming the connections of the circuits as a function of the number of times the actuator (18, 28, 38) is activated.

13. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 1, wherein power supply by cell or by rechargeable battery (23) is also provided.
14. (Currently Amended) The apparatus for medical screening and diagnosis as claimed in claim 1, wherein the housing (100) forms the ear trumpet (1) accommodating the ultrasound probe (8), [[in particular]] in a centered manner, and [[in that]] contact means (7) are provided to be interposed temporarily between the ultrasound probe (8) and the membrane (2) of the ear trumpet (1), in order to transmit a Doppler signal to the processing circuit (37) coupled to the loudspeaker (34) which emits the audio signal amplified in the ear trumpet (1).
15. (Currently Amended) The apparatus for medical screening and diagnosis as claimed in claim 14, wherein the contact means of interposition comprise an inflatable balloon (7) covering the distal end of the probe (8) and a device (10) for inflating the balloon (7) with liquid.
16. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 15, wherein the inflating device comprises a tubing (6) which brings the balloon (7) into communication with a source of liquid, and means (10) intended to drive liquid from the source into the tubing (6).
17. (Currently Amended) The apparatus for medical screening and diagnosis as claimed in claim 14, wherein the contact means of interposition (7) between the probe (8) and the membrane (2) are controlled from outside the ear trumpet (1) by the actuator button (18).

18. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 14, wherein means controlled from outside the ear trumpet (1) and intended to tilt the probe (8) are provided in connection with the actuator button (18).
19. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 14, wherein the means intended to tilt the probe (8) comprise at least one cable (21), of which one end is fixed to the end of the probe (8), and means (12) intended to pull the other end of the cable (21) and tilt the end of the probe in order to orient it toward the sound response most perceptible at the earpiece.
20. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 1, wherein a circuit (29) is provided for powering the ultrasound probe (8) and controlled by the actuator button (18).
21. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 1, wherein a circuit (30) is provided for recording the Doppler signal and controlled by the actuator button (18).
22. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 14, wherein the actuator buttons form a single button, and means (11) are provided which are intended to maintain the flow of liquid when the actuator button is released, these means comprising a plunger (10) made of a magnetic material for driving the liquid, and an electromagnetic coil (11) applying a magnetic force for holding the plunger (10).
23. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 1, wherein the probe (8) is accommodated in the housing (100) and outside the ear trumpet (1'), the housing forming a substantially cylindrical turret.

24. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 1, wherein the probe (8) is accommodated partially in the housing (100) and partially outside the housing, the probe passing through the housing (100) via a sealing ring (75) which mechanically isolates the probe (8).
25. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 24, wherein the housing has a lower part (100b) curved in its central area.
26. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 1, wherein the probe (8) is outside the housing (100), which is reduced to an upper part (100a) for signal processing, the probe (8) being fixed along the ear trumpet (1).
27. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 23, in which the probe (8) is inclined toward the central axis (X'X) of the ear trumpet by a fixed angle chosen between 30 and 70 degrees relative to the plane of the membrane (2), preferably between 40 and 55 degrees, so as to optimize the examination by causing convergence of reception of the ultrasound signals and that of the stethoscopic signals.
28. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 23, in which the housing (100) has a turret shape substantially cylindrical and of ovoid cross section, the turret is limited by an upper face (Fs), at the center of which the linking conduit (3, 33) emerges, and by an open lower face (Fi) where the membrane (2) of the ear trumpet (1') and the end (8a) of the probe are positioned.
29. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 23, wherein the probe is prolonged, and means are provided for delivering (60, 6a, 6b) the semi-solid product (61) forming a connecting layer between the end (8a) of the continuation (8b) of the probe (8) and the skin of the patient.

30. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 29, which comprises a plunger (36) which controls the semi-solid product and is accessible from the housing (100), in particular from the upper face (Fs), the switch (38) for powering the probe 8 also being arranged on the housing.
31. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 30, which comprises a reservoir (60) arranged in the housing (100), the gel being delivered through a flexible tube (6a) via an ejection nozzle (6b) situated in contact with the lower face (Fi) of the turret (100), and the thrust of the plunger (36) making it possible to dose the correct quantity of gel delivered via the nozzle (6b).
32. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 23, wherein the probe (8) is connected to a loudspeaker (34), mounted on an outer face of the ear trumpet (1') via the transducer circuit (37), the Doppler signal is converted by the transducer circuit (37) in order to supply an audio signal via the loudspeaker (34), the sound being amplified in the ear trumpet, propagated in the linking conduit (3, 33), then listened to at the earpieces (4).
33. (Currently Amended) The apparatus for medical screening and diagnosis as claimed in claim 32, wherein the interpretation software which controls the microprocessor of a microcomputer to be coupled to an output (101) provided on the housing (100) comprises means for retrieving and storing the results of stethoscopic [[and/or]] or Doppler listening or both.
34. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 33, wherein the microcomputer is equipped with a screen which shows the graph of the Doppler signal after the Doppler signal has been converted by the circuit (37) and also transmitted to the microcomputer and stored in the form of a video signal via the output (101).

35. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 33, wherein the software provides a diagnosis on the basis of the evaluations which have been retrieved and stored, with the aid of the display module with at least one light-emitting diode (39, 39a), which is mounted on the housing (100) and coupled to the transducer circuit (37) for viewing the interpretation.
36. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 23, wherein the transducer circuit (37) converts into video signals the stethoscopic sound signal received by the microphone as claimed in claim 4 and the Doppler signal received by the probe (8).
37. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 36, wherein the video signals are transmitted to the microcomputer via the output (101) and/or toward a viewing and printing module (50) situated at a remote point.
38. (Previously Presented) The apparatus for screening and diagnosis as claimed in claim 36, wherein an antenna (41) is provided to emit the video signals picked up by the receiver (51) of the viewing module (50), then processed in a demodulator (52) and in a viewing adapter (53).
39. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 36, wherein a headset output (42) is also provided to permit stethoscopic listening based on the sound captured by the microphone or based on the Doppler signal converted into an audio signal by the circuit (37).
40. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 36, wherein the video signals, and if appropriate audio signals after pickup, are transmitted to the microprocessor (100) for evaluation and are viewed on the screen of the microprocessor.

41. (Previously Presented) The apparatus for medical screening and diagnosis as claimed in claim 36, wherein the display module with light-emitting diodes (39, 39a) shows a direct or cross interpretation based on the Doppler and stethoscopic video signals as claimed in claim 7.
42. (Previously Presented) The apparatus for medical screening and diagnosis in claim 36, wherein the display module with light-emitting diodes ~~[(39, 39a)shows]~~ (39, 39a) shows a direct or cross interpretation based on the Doppler and stethoscopic video signals as claimed in claim 8.
43. (Previously Presented) The apparatus for medical screening and diagnosis in claim 2, wherein said means is in a form of a gel.
44. (Previously Presented) A method of effecting medical screening and diagnosis, which comprises effecting dual detection of stethoscopic and Doppler signals to effect said screening and diagnosis using ~~[[with]]~~ the apparatus of claim 1.
45. (New) The method of effecting medical screening and diagnosis of claim 44, wherein the apparatus is applied to screen cardiovascular disease by measuring systolic pressure to establish a Systolic Pressure Index (SPI).
46. (New) The method of effecting medical screening and diagnosis of claim 45, wherein the screen cardiovascular disease is an incipient material disease.